

second paper Mr. Harmer discussed the meteorological conditions of North-western Europe during the Pliocene and Glacial periods, finding in the early glaciation of Scandinavia, and the consequent establishment of anticyclonic conditions over that area, a probable solution of the change in the direction of the prevalent winds which he believes to be necessary to account for the accumulation of the crag-deposits on our eastern coast.

A short paper by Rev. J. M. Mello on some paleolithic implements of North Kent, and the exhibition on behalf of Mr. B. Harrison of a collection of "eoliths" from the neighbourhood of Ightham, led to a brisk discussion, in which Sir John Evans, Prof. Boyd Dawkins and other speakers denied that the so-called "eolithic implements" showed proof of human workmanship, while Prof. T. Rupert Jones stated Mr. Harrison's view of the case and was supported by Mr. Allen Brown.

The chief paper of the final session on Wednesday was that of Mrs. M. M. (Ogilvie) Gordon on sigmoidal curves in the earth's crust. This admirably rendered discourse was supplementary to the work recently published by Mrs. Gordon in the *Quarterly Journal of the Geological Society* and in NATURE, and had for its object the general statement of the phenomena which are presented when rock-folds in two directions intersect each other and produce "crust-torsion," with particular reference to the earth-forms which have been thus produced in the Alpine mountain-system. The complexity of the subject seemed to daunt most of the speakers in the discussion; but Prof. Lapworth pointed out how well the results of Mrs. Gordon's field-work agreed with the theoretical deductions to be drawn from the study of intercrossing earth-waves.

As usual, some of the most solid work of the Section was embodied in the reports of the committees of research which were presented during the meeting, but of which lack of space forbids more than the bare mention. Among these were the reports presented by Prof. A. P. Coleman on Interglacial Beds in Canada; by Mr. P. M. C. Kermode on the Deposits containing Elk remains in the Isle of Man; by Prof. P. F. Kendall on Erratic Blocks; by Rev. G. C. H. Pollen on the Ty Newydd Caves; by Mr. H. Bolton on the Uphill Caves; and by Prof. W. W. Watts on Geological Photographs.

Short afternoon excursions, which have become an established feature of the Section's arrangements, were made during the week to the Ropersole Coal Boring, to the colliery works under Shakespeare Cliff, to the East Cliff and St. Margaret Bay, and to the Warren at Folkestone.

To sum up the proceedings of the week—the sessions of the Section were well attended throughout, and the papers, though without any especially salient features, maintained a good average both in numbers and quality. Some palaeontological papers which might have found place in the Section were taken in Sections D and K, and this branch of geological science was in consequence scarcely represented in the list.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Mr. W. L. H. Duckworth has been appointed to the University lectureship in physical anthropology.

Mr. R. G. K. Lempert has been appointed Assistant Demonstrator in Experimental Physics.

It is proposed that McGill University, Montreal, be adopted as an institution affiliated to the University.

A NEW technical institute is to be erected, at a cost of 845*l.*, in Carisbrooke Road, Liverpool.

THE sum of 25,000 dollars has been promised to Vassar College towards a biological laboratory on condition that an equal amount be raised for the same purpose by other means.

THE foundation-stone of a new technical college for Sunderland has just been laid. The college is to cost 25,000*l.*, and will, it is hoped, eventually be affiliated to Durham University.

DR. C. B. DAVENPORT, of Harvard University, has been appointed professor of zoology at the University of Chicago, in the place of Prof. Wheeler, who has gone to the University of Texas.

MR. H. B. KNOWLES has been appointed principal of the Swindon and North Wilts Technical School. Hitherto he has been teacher of physics and electrical engineering at the Bradford Technical School.

THE Technical Instruction Committee of the West Riding (Yorks.) County Council have consented to financially assist the managers of the district technical schools in forming reference libraries on the subjects of local instruction.

MR. EMERSON E. McMILLIN has given the Ohio Academy of Science 250 dollars with which to carry on scientific investigations, and declared his intention of giving a similar amount annually if the money is wisely expended.

DARTMOUTH (U.S.A.) COLLEGE has recently received from Mr. E. Tuck, of New York, 300,000 dollars, to be used for the purposes of instruction, and Tuft's College has had bequeathed to it the sum of 60,000 dollars by the late Mrs. M. D. Goddard, of Newton, Mass.

THE regents of the University of California have accepted the plans designed by M. Bénard, of Paris, for their new university buildings, and some of the buildings will, it is stated, be begun next spring. The movement, as will be remembered, is mainly due to the generosity of Mrs. Phoebe A. Hearst.

AT a meeting held at Newcastle on Monday last, it was decided to make an effort to raise funds for the completion of the buildings in connection with the Durham University College of Science. Subscriptions amounting to 950*l.* were promised at the meeting, and the sum of 100,000*l.* will, it is hoped, be raised by the end of the year.

IN connection with the Liverpool University College, Mr. W. Rathbone has made provision for the award annually of a Rathbone medal to the most distinguished third-year student. Mrs. George Holt and Miss Emma Holt (to whom the College has on more than one former occasion been much indebted) have each given the sum of 500*l.* towards the physical laboratories of the institution.

AMONG recent appointments abroad we notice the following:—Dr. S. Avery to be professor of chemistry in the University of Idaho; Mr. H. B. Ward to be professor of zoology at Nebraska University; Mr. P. Field to be professor of mathematics in Carthage College; Dr. E. O. Sisson to be director of the histological laboratory in the recently consolidated medical schools of Keokuk, Iowa.

WITH reference to a recent note in this column respecting the admission of women students to the course of study at the Owens College which would qualify them for medical degrees and practice, we are requested to state that the resolution in favour of the course adopted was carried by a majority of nineteen, the voting being twenty-one for the resolution and two against it.

THE promoters of the Birmingham University scheme have recently received the munificent donation of 20,000*l.* from Mr. Charles Holcroft, and a number of large sums from other gentlemen, which bring the total amount promised to upwards of 315,400*l.* The total of over 300,000*l.* having been reached, the committee have secured the last 12,500*l.* which was offered by the friend of Mr. Joseph Chamberlain who prefers to remain anonymous.

SCIENTIFIC SERIAL.

American Journal of Science, October.—Explosive effect of electrical discharges, by J. Trowbridge, T. C. McKay, and J. C. Howe. The authors investigated the sudden increase of pressure in the gas, through which the discharge passes, by means of a vacuum tube provided with a manometer gauge. When spark-gaps up to 50 cm. were employed, with a maximum difference of potential of three million volts, they found that the explosive effect increased closely in proportion to the length of the spark, and began to diminish when the spark was longer than 50 cm. The air itself then becomes a fairly good conductor, and is strongly ionised.—Colour vision and the flicker photometer, by O. N. Rood. The author's flicker photometer reveals the fact that the curve of colour vision is not the same in any two persons supposed to have normal sight. Among five persons capable of sustaining Holmgren's worsted test, differences of colour values ranging from 1 to 14 per cent. were found.—Iodometric determination of gold, by F. A. Gooch and F. H. Morley. The authors investigate the effect upon the immediate evolution of iodine brought about by adding varying amounts of water to the gold solution before introducing the

iodide, and the effect of different amounts of iodide at different dilutions.—Mineralogical structure and chemical composition of the Trap of Rocky Hill, N.J., by A. H. Phillips. The Rocky Hill trap, from its holocrystalline nature, would be classed as a dolerite. From the character of the decomposition of the olivine, and the solution cavities in the diabase crystals, the intrusive nature of this dike is evident, as it must have been formed at a considerable depth below the surface and under very heavy pressure.—Some analyses of Italian volcanic rocks, by H. S. Washington. This paper deals with the composition of trachytes of the Phleorean Fields and of Ischia. There are three parallel volcanic lines in the Italian district. The latest, along the peninsula, is characterised chiefly by high K_2O , by high CaO , and the presence of leucite. The next, that of the islands along the west coast, is high in alkalis, but with Na_2O rather higher than K_2O , and without leucite. The third, which lies far out in the Mediterranean, and which is possibly the oldest, is much higher in soda, and seems to be characterised by the presence of peculiar soda minerals such as enigmatite and aegirine, nepheline also occurring in places.—Thermo-electricity in certain metals, by L. Holborn and A. L. Day. This is an English version of the author's Reichsanstalt paper on the gas thermometer.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, October 9.—M. van Tieghem in the chair.—On the elastic equilibrium of a rectangular plate, by M. Maurice Lévy.—Some remarks on double integrals of the second species in the theory of algebraic surfaces, by M. Emile Picard.—On a modification of Bessel's method for calculating occultations, by M. L. Cruls. In the modification suggested use is made of the time of apparent conjunction of the two stars. The advantage resulting from this method is twofold: it gives by a single calculation a precision generally only obtainable by a second approximation, and lends itself easily to a graphical construction and a simple geometrical interpretation of the different elements upon which the conditions of the phenomenon depend.—Observations of the Giacobini Comet (1899 e) made at the Observatory of Besançon, by M. P. Chofardet. The observations were made on the nights of October 3 and 4. The comet had the appearance of a nebulous sphere, 1' in diameter, and having a slight nucleus of about the 13th magnitude.—On fundamental functions and on the development of a holomorphic function at the interior of a contour in a series of fundamental functions, by M. Renaux.—On the stereochemistry of nitrogen, by M. J. A. Le Bel. The author replies to various criticisms by van't Hoff, Markwald and others on his work published in 1891 on the preparation of active compounds from methyl-ethyl-propyl-isobutylammonium chloride, and lays down the exact experimental conditions necessary to repeat his results. The conclusion is drawn that there can now be no doubt as to the optical isomerism existing in the derivatives of ammonium chloride containing four different radicles, and containing at least ten atoms of carbon. It is also established that with derivatives less rich in carbon the stability of these optical isomerides is diminished.—On the reversible liquefaction of albuminoids, by M. Tsvett. It is known that the solution of albuminoids is favoured by certain acids, alkalis, and salts. The author has found that certain organic substances, such as resorcinol, pyrocatechol, phenol, chloral hydrate, &c., possess this liquefying property to a very marked extent. Thus a solution of gelatine treated with an eighty per cent. aqueous solution of resorcinol, forms two liquid layers, the upper a solution of gelatine in aqueous resorcinol, the lower a solution of aqueous resorcinol in gelatine, the coefficients of reciprocal solubility varying with the concentration of the resorcinol and the temperature. The phenomenon appears to be truly reversible.—On the volumetric estimation of quinones derived from benzene, by M. Amand Valeur. The quinones are reduced by a mixture of potassium iodide and hydrochloric acid, and the liberated iodine titrated with sodium thiosulphate. Experiments were carried out with quinone, dichloroquinone, toluquinone, and thymoquinone; the results are quite satisfactory, and are very rapidly obtained.—On the structure of the nucleus in the myelocytes of Gasteropods and Annelids, by M. Joannes Chatin. The myelocytes of these invertebrates, contrary to the usual statements, may show a very

clear, nuclear membrane.—On the alternation of generations in *Cutleria*, by M. C. Sauvageau.—On a gutta-percha plant capable of being cultivated in a temperate climate, by MM. Dybowski and G. Fron. The authors have extracted gutta-percha from the fresh leaves of *Eucommia ulmoides*. This plant can be grown in temperate climates, and experiments were carried out as to the best mode of multiplication of the plant. It is easy to obtain good seeds in large quantity, but their germination is difficult and capricious. Propagation through cuttings, however, offers no difficulties, the slips taking root easily and developing vigorously.—Action of anaesthetic vapours upon the vitality of dry and moist seeds, by M. Henri Coupin. The vitality of dry seeds is unaffected even by saturated ether and chloroform vapours; but with moist seeds the case is quite different, the presence of only 3·7 c.c. of ether in 10 litres of air being sufficient to kill the seed.

DIARY OF SOCIETIES.

THURSDAY, OCTOBER 19.

CAMERA CLUB, at 8.15.—Clouds and Photographic Landscapes: J. Cadet.

TUESDAY, OCTOBER 24.

ROYAL PHOTOGRAPHIC SOCIETY, at 8.—Wellington Film: Harry Wade.

FRIDAY, OCTOBER 27.

PHYSICAL SOCIETY, at 5.—The Magnetic Properties of the Alloys of Iron and Aluminium: Dr. S. W. Richardson.—Exhibition of a Model illustrating a Number of the Actions in the Flow of an Electric Current: G. L. Addenbrooke.—Repetition of some Experiments with the Wehnelt Interrupter devised by Prof. Lecher: W. Watson

INSTITUTION OF MECHANICAL ENGINEERS, at 7.30.—The Incrustation of Pipes at Torquay Water Works: William Ingham.—A Continuous Mean-Pressure Indicator for Steam Engines: Prof. William Ripper.

CONTENTS.

PAGE

Electro-magnetic Theory. By C. S. Whitehead	589
Our Book Shelf: —	
Robson: "Catalogue of the Lepidoptera of Northumberland, Durham, and Newcastle-upon-Tyne."—R. L.	590
"The Process Year-Book for 1899"	590
Wraps and Gee: "Mathematical Tables"	590
Maupin: "Opinions et Curiosités touchant la Mathématique"	590
Letters to the Editor: —	
Peripatus in the Malay Peninsula.—Prof. Edward B. Poulton, F.R.S.	591
Dark Lightning Flashes.—Shelford Bidwell, F.R.S.	591
Heredity and Variation.—Prof. J. Mark Baldwin	591
Phosphorescent Earthworms.—Prof. W. Blaxland Benham	591
Meeting of the International Meteorological Committee	
The Coming Shower of Leonids. (With Diagram.) By W. F. Denning	592
Notes	
Our Astronomical Column: —	
Comet Giacobini (1899 e)	597
Holmes' Comet (1899 d)	597
Opposition of Jupiter, 1899	597
Law Connecting Motions in Planetary System	597
On the Characteristics of a University. By Prof. Rücker, F.R.S.	
Forthcoming Books of Science	598
The British Association: —	
Section K.—Botany.—Opening Address by Sir George King, K.C.I.E., F.R.S., President of the Section. II.	604
Chemistry at the British Association	608
Geology at the British Association	610
University and Educational Intelligence	611
Scientific Serial	611
Societies and Academies	612
Diary of Societies	612